

ABSTRACT

Methods and compositions for delivering pharmaceutical agents into cells, in particular urothelial cells of the bladder, are provided. In the methods and compositions of the invention, a solubilized cholesterol composition is used to facilitate delivery of pharmaceutical agents. Preferably, the cholesterol is solubilized by a cyclodextrin (e.g., methyl- β -cyclodextrin) and the pharmaceutical agent comprises a polynucleotide and either a cationic lipid, a cationic polymer or a dendrimer. Improved methods for transfecting polynucleotides into cells thus are also provided, using cationic lipids, cationic polymers or dendrimers and solubilized cholesterol, wherein the transfection efficiency is enhanced compared to use of cationic lipids, cationic polymers or dendrimers alone. Preferred methods of the invention involve transfecting polynucleotides into urothelial cells, preferably for therapeutic treatment of bladder cancer using, for example, a polynucleotide(s) encoding an interleukin(s), an interferon(s), a colony stimulating factor(s) and/or a tumor suppressor(s).